

REMARKS

The present Amendment amends claims 1-3 and 5 and leaves claims 4 and 6 unchanged. Therefore, the present application has pending claims 1-6.

The title of the invention stands objected to as not being descriptive. The title of the invention was changed to "STORAGE APPARATUS HAVING PLURAL CONTROLLER INCLUDING INTERCONNECTED MEMORIES" which Applicants submit is descriptive of the present invention. Therefore, this rejection is overcome and should be withdrawn.

The specification stands objected to being that the Examiner alleges that the specification has not been checked to the extent necessary to determine the presence of all possible minor errors. The specification has been reviewed and Applicants were unable to find any errors requiring correction. It should be noted that the specification submitted as part of the present application is the very same specification that has been published as U.S. Patent Nos. 6,519,680; 6,647,461 and 6,477,619. Therefore, Applicants submit that there are no errors contained in the specification of the present application requiring correction. Accordingly, reconsideration and withdrawal of this objection is respectfully requested. In any event, the Examiner is respectfully requested to point to any errors the Examiner may be aware of so that such errors can be immediately corrected to expedite prosecution of the present application.

Claims 1-6 stand rejected under 35 USC §101 as claiming the same invention as that of claims 1-8 of prior patent No. 6,647,461. Particularly, the Examiner alleges that claims 1-8 of prior patent '461 contain all elements of claims 1-6 of the

instant application and as such anticipate claims 1-6 of the instant application. the Examiner acknowledges however, that the claims do contain “differences in wording”. This rejection is traversed for the following reasons. Applicants submit that the claims as originally presented and as now amended do not constitute the same invention as that of prior patent ‘461. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Particularly, claims 1, 4 and 6-8 of prior patent are each independent claims each recites features of a disk array controller which is entirely different from that of the present invention. The preamble of each claim of the prior patent ‘461 being with “Disk array controller” or “Disk array control unit”. The preamble of each claim of the present application beings with “Storage apparatus system”. Thus, each of claims 1-8 of the prior patent ‘461 are directed to a disk array controller or control unit whereas claims 1-6 of the present application are directed to a storage apparatus system.

Therefore, on its face, the claims are directed to entirely different inventions, one being a disk array controller or control unit which forms a part of a storage apparatus and the other being a storage apparatus system which contains a plurality of disk drives and a disk array controller. On this basis alone, the claims are clearly not the same invention as prohibited under 35 USC §101.

Further, in this regard, each of the claims 1-6 of the present application recite that the storage apparatus system includes a plurality of controllers and a plurality of disk drives. At no point is there any teaching or suggestion in any of claims 1-8 of the prior patent ‘461 of a plurality of disk drives. Each of claims 1-8 of the prior

patent '461 simply recite that the disk array controller includes an interface which may be connected to disk drives. However, actual disk drive elements are not recited in each of claims 1-8 of the prior patent.

There are numerous other distinctions between claims 1-8 of the prior patent '461 and claims 1-6 of the present application. Such other distinctions need not be addressed at this point being that as a very simple basic matter the claims 1-8 of the prior patent '461 is directed to an entirely different apparatus than that recited in claims 1-8 of the present application. Accordingly, reconsideration and withdrawal of the 35 USC §101 rejection is respectfully requested.

Claims 1-6 stand rejected under 35 USC §102(e) as being anticipated by Tuccio (U.S. Patent No. 6,496,957). This rejection is traversed for the following reasons. Applicants submit that the features of the present invention as now more clearly recited in claims 1-6 are not taught or suggested by Tuccio whether taken individually or in combination with any of the other references of record. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to claims 1-6 so as to more clearly recite that the present invention is directed to a storage apparatus system including a plurality of controllers and a plurality of disk drives connected to the controllers. Unique according to the present invention, for example, as illustrated in Figs. 1 or 5 is that each disk array control unit 1-2 includes a first interface 11 connected to a computer 50, a second interface 12 connected to the disk drives 5 and a first (shared) memory 13 connected to the first and second interfaces 11 and 12 and that the first memory

13 of the disk array control unit 1-2 is interconnected to other first memories 13 of the other disk array control units 1-2 by a first communication line 24.

The above described features of the present invention allows for the interconnection of shared memory units 13 which allows for data read/write accesses to be conducted by the disk array control unit 1-2 in not only its own shared memory unit 13 but other shared memory units 13 of the other disk array control units 1-2. Such features are clearly not taught or suggested by Tuccio.

Tuccio simply teaches a storage as illustrated in Fig. 1 wherein a system interface 10 interconnects a host computer 12 with disk drive units 14. Tuccio teaches that the system interface includes a plurality of directors 20, alleged by the Examiner as being controllers, that are connected to I/O adaptors 22 to cause the transfer of data between the host computer 12 and the disk drives 14.

In the Office Action the Examiner makes numerous unsupported allegations such as each of the controllers includes a first interface element 32, a second interface element 22, a first memory "shared resources" connected to the first and second interfaces as illustrated in Fig. 2 and communication lines between I/O adaptors and host computer.

Applicants submit that it appears that the Examiner may have completely misunderstood the teachings of Tuccio and is using Applicants invention to cobble together an argument that Tuccio anticipates the features of the present invention.

To begin with, at no point is there any teaching, suggestion or illustration that each director includes within its own configuration a first and second interfaces and a first memory as recited in the claims.

In Fig. 2, Tuccio teaches the internal structure of a director and illustrates a “shared resources” element. In order for the “shared resources” as taught by Tuccio to correspond to the first memory as recited in the claims such “shared resources” would have to be interconnected to the “shared resources” of the other directors as per the claims. Such is clearly not illustrated in Fig. 2 of Tuccio or taught by Tuccio. In fact, the only connections described by Tuccio with respect to the “shared resources” is, for example, connections to “y CPU and x CPU sections” which are connected to port bypass cards 34 through I/O adaptor 22. There is no teaching, for example, that the “shared resources” of director 20₀ is interconnected by a communication line to the “shared resources” of director 20₁. There is no such illustration of such feature in Fig. 2 of Tuccio.

Therefore, contrary to the allegations by the Examiner there is no teaching or suggestion of the features recited in the claims wherein each controller includes a first memory connected to first and second interfaces, wherein the first memory is connected to other first memories of the other controllers by a communication line as recited in the claims.

Therefore, as is clear from the above, the features of the present invention as recited in the claims are not taught or suggested by Tuccio. Accordingly, reconsideration and withdrawal of the 35 USC §102(e) rejection of claims 1-6 as being anticipated by Tuccio is respectfully requested.

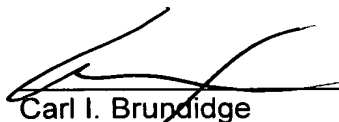
The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the reference utilized in the rejection of claims 1-6.

In view of the foregoing amendments and remarks, applicants submit that claims 1-6 are in condition for allowance. Accordingly, early allowance of claims 1-6 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417 (520.38992CX3).

Respectfully submitted,

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